

Notice of Allowability	Application No.	Applicant(s)	
	10/731,467	KIM ET AL.	
	Examiner	Art Unit	
	Bryan Bui	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 12/10/2003.
2. ☒ The allowed claim(s) is/are 1-11.
3. ☐ The drawings filed on _____ are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☒ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date 4/26/05.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date <u>4/26/05</u> . |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

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1. Application filed on 12/10/2003 is examined. Claims 1-11 are pending in the application.
2. **An examiner's amendment** to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. William T. Ellis on 4/26/2005.

The following changes to the drawings have been approved by the examiner and agreed upon by applicant: Figures 1 and 2 changes to add labeled --Prior Art---. In order to avoid abandonment of the application, applicant must make these above agreed upon drawing changes.

3. The following is an examiner's statement of reasons for allowance:

Claims 1-11 are allowable over the prior art of record because none of the prior art whether taken singularly or in combination to teach the claimed combination as recited, particularly requires with other limitations in a method for detecting a fault on a transmission line by using harmonics and a state transition diagram by presuming a state of the electric power system by analyzing the state transition in the state transition diagram according to variation of the entry confirmation signal and the critical

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confirmation signal, thereby determining a fault, no-fault state, and a load-interruption state, in which apparent impedance enters into the zone due to an increase of load.

In the closest prior arts discloses a path of apparent impedance when the fault occurs. After the fault occurs, a location of apparent impedance is varied depending on a distance between the distance relay and a fault position. Thus, it is possible to determine the fault and the fault position by using the location of apparent impedance. However, if load of an electric power system is increased on transmission lines, voltage is reduced, current is increased, and apparent impedance calculated by the distance relay is reduced, and when the load is continuously increased, apparent impedance may enter into a zone, and if apparent impedance enters into the zone due to increased load rather than the fault, which is called load encroachment, the distance relay is malfunction, and the voltage is reduced and current is increased due to an unstable state of voltage. Thus, the method detects the fault by using apparent impedance entering into the zone (such show in the prior art of figure 1). Further, the variation of apparent impedance caused by the fault, removal of the fault, and load-break in a transient state, in which apparent impedance is remarkable varied (show in the prior art of figure 2). The reference to Adamiak et al (US 6311307) disclose a method for detecting faults on a power transmission line system which mentioned about power system impedance relays and indicates a circuit diagram of a distance relays operates by measuring voltage and current at one end of a line to calculate effective impedance, which is proportional to line length, and impedance relays use a reach for a first zone relay, which is typical set for less than 80-90% of the total line length impedance

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(column 15, lines 35-57). None of the prior arts teach or suggest the limitations shown in the claimed combination with other limitations as recited.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bryan Bui whose telephone number is 571-272-2271. The examiner can normally be reached on M-Th from 7am-4pm, and Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Barlow can be reached on 571-272-2269. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BB

4/26/2005

BRYAN BUI
PRIMARY EXAMINER

